

Ethnobotany of Medicinal Plants Among Family Farmers: Therapeutic Itinerary in the South Plateau of Santa Catarina State*

Cómo citar este artículo: Fernandes, P., & Boff, P. (2017). Ethnobotany of medicinal plants among family farmers: Therapeutic itinerary in the South Plateau of Santa Catarina State. *Cuadernos de Desarrollo Rural*, 14(80), 1-13. <https://doi.org/10.11144/Javeriana.cdr14-80.empa>

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DOI: <https://doi.org/10.11144/Javeriana.cdr14-80.empa>

Redalyc: <http://www.redalyc.org/articulo.oa?id=11756489002>

Received: 24 September 2017 ■ Accepted: 28 November 2017

Abstract:

European immigrants –and those mixed with native people called caboclos– keep in Southern Brazil therapeutic peculiarities derived from the experience with the biodiversity present in highland fields ecosystems, associated with araucaria forests. The study systematized the popular knowledge about herbal medicine practices adopted by family farmers in the South Plateau of Santa Catarina State. Semi-structured interviews were adopted for the collection of information. Also, indices were adopted as estimates. The knowledge of medicinal plants shared by family farmers of the region appears as a sociocultural heritage, which is still present in rural communities in spite of land changes and alterations in land use.

Keywords: phytotherapy, family farming, local knowledge.

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Etnobotánica de Plantas Medicinales Entre Agricultores Familiares: Itinerario Terapéutico en la Meseta del Sur del Estado de Santa Catarina

Resumen:

Los inmigrantes europeos (y aquellos mezclados con nativos, denominados caboclos) en el sur de Brasil conservan peculiaridades terapéuticas derivadas de la experiencia con la biodiversidad presente en los ecosistemas de las tierras altas, asociados con los bosques de araucaria. El estudio sistematizó el conocimiento popular sobre las prácticas de medicina herbal adoptadas por agricultores familiares en la meseta sur del estado de Santa Catarina. Se realizaron entrevistas semiestructuradas para la recopilación de información. Además, los índices se adoptaron como estimaciones. El conocimiento de las plantas medicinales compartidas por los agricultores familiares de la región aparece como un patrimonio sociocultural aún presente en las comunidades rurales a pesar de los cambios en la tierra y las alteraciones en el uso de la terreno.

Palabras clave: fitoterapia, agricultura familiar, conocimiento local.

Introduction

The relationship between human societies and plant diversity has provided effective learning that ensures support for men facing the adversity that threatens their health and well-being (Santos, 2007). This set of knowledge is dynamically adjusted and perpetuated in its principles, considered as traditionally inherited cultural heritage (Toledo & Barrera-Bassols, 2009). The phytotherapeutic practices of curing illnesses stands out as an ancient link between plants and humanity (Albuquerque, 2005). The knowledge that emerges from the use of medicinal plants to cure injuries/illnesses became an area of scientific studies called *Ethnobotany*, whose branch of science is concerned with the identification, systematization, and recognition of the popular use of plants for therapeutic purposes (Alexiades, 2010). The need to build a new understanding of sustainable rural development requires the systematic integration of the use of natural resources, technological innovation, and social welfare, which facilitates the emergence of a rich scientific debate. Among the proposals for innovative approach, there is the appreciation of popular knowledge about the use of medicinal plants as a strategic approach in the preservation of natural resources, since it legitimizes the current use of such resources. Due to the influence of that debate, medicinal plants in Brazil are included in the public health care through the legal instructions provided in the National Policy of Medicinal Plants and Herbal Remedies (Pnmpf, in Portuguese), regulated by the Decree 5,813 of 2007. That policy has highlighted the knowledge present in traditional communities, and how the public health service can incorporate it into day by day attendance. Ethnographic studies show that the use of medicinal plants keeps regional particularities in the strategies of curing illness and it is influenced by ethnic groups that have access to such plant species (Medeiros, Fonseca, & Andreato, 2004).

The rural areas of the Southern Plateau of Santa Catarina offer ethno-cultural singularities arising in the form of occupation of the land by migrations, and their miscegenation between Portuguese, indigenous and afro-descendent people, originating from the 18th century to what is called today *caboclo* (Mariot & Reis, 2006). The *caboclo*, therefore, must be studied and understood from the ethnic and cultural perspective (Pereira, Fert Neto, Ciprandi, & Dias, 2006). The experience and the interaction with the environment, originally occupied by high fields, an ecosystem associated to araucaria forest formation, has enabled emerging particularities that occurred

in their way of life, their beliefs and their production systems, which individualizes the *caboclo* as a social group (Bloemer, 2000). In the early 20th century, the Southern Plateau of Santa Catarina also started to be occupied by Italian immigrants, who brought to the region values, behaviors, and cultural manifestations of those existing and shared by the *caboclos*, settling on the cultural expression *serrano*, which means *the one who lives in the mountain* that matches the region of the Southern Plateau of Santa Catarina (Bloemer, 2000).

Therefore, the objective of this study was to systematize the popular knowledge associated with the use of phytotherapy by farmers in the Southern Plateau of Santa Catarina State, Brazil, as well as the sociocultural particularities concerning healing practices adopted by them. Such particularities may represent mechanisms for contextualised development proposals for that territory.

Methodology

The ethnobotanical survey was carried out in 18 municipalities of the Southern Plateau of the Santa Catarina State, from November, 2011 to December, 2012, with farmers and family farmers recognized in their respective municipalities as growers, users, and maintainers of medicinal plants. We adopted the definition of “family farmer” established in Brazil by the Law 11,326 of 2006.

Legal measures have been taken by the Ethics Committee of the University of the State of Santa Catarina, through protocol number 334,932, for the access to popular knowledge of medicinal plants before the start of the survey. The initial indication of the respondents was mediated in each municipality by the public rural extension officers or health agents. Subsequent respondents were sampled through intentional technique using the snowball approach (Bailey, 1994; Tongco, 2007). A guide of questions following the pattern of semi-structured interviews was used. The initial questions raised cultural characterization information of the respondent and the family of the interviewee. Later, we addressed the uses, phytotherapeutic indications and sources of access to knowledge, as well as its reproduction in family and community nucleus.

The survey ended in each municipality when it was verified that the answers in the interviews carried similar reports about medicinal plants and their phytotherapeutic use. That situation was checked through the saturation curve of the informant, or when the indication of potential respondents led to people who had contributed to the research.

Also, the systematization of the data followed the qualitative features of Minayo (2012), combined with quantitative tools. Excerpts of the conversations held during the interviews, highlighted in italics, were used to illustrate reflections along the discussion. Nonetheless, the informers’ identity was not revealed, for ethical reasons.

The categorization of respondents was built in 4 types, according to herbal medicine practices, known or used, associated plants, reproduction, and access sources of knowledge, following the methodology proposed by Minayo (2004). The typification proposed in this study had the purpose of assisting the interpretation of points of interest that could not only be obtained by quantitative tools. The analysis was completed by the Kruskal-Wallis test at 5%, to check for significant differences between the 4 types of respondents.

The characterization of phytotherapeutic use was estimated by the indexes of value of diversity use (VDU) and the value of consensus usage mode (VCUM), adapted from Monteiro, Albuquerque, Lins-Neto, Araújo, & Amorim (2006). For the calculation of VDU and VCUM indexes, the therapeutic indications were grouped into 15 categories of use, adapted from the International Statistical Classification of Diseases and Related Health Problems, proposed by the World Health Organization (WHO, 2007). We established the category of cultural diseases, which includes diseases related to ritual cures influenced by beliefs and religion, and the other cultural-related uses, representing diseases that do not fit into a specific category described in the WHO (2007) document.

Results and Discussion

Characterization of the respondents and their sociocultural aspects

For the study, 43 people between 38 and 92 years of age were interviewed, 15 male and 28 female. Also, 17 were family farmers with a rural housing and in agricultural activity, and 26 were retired farmers as rural workers, according to which 16 lived on a rural property, and 10 resided at the seat of their respective municipality. The 10 interviews with residents in seats of municipalities were considered as proceeding from the rural areas, by the fact that their identity has been based on the day-to-day experiences of the farmer. Therefore, their rurality is maintained, according to Wanderley (2001). The main economic activities of the respondents include extensive cattle breeding with production of meat, milk and locally made cheese; pine nut-araucaria harvesting; production of grains (corn and beans) intended for their own consumption; and vegetable production for the institutional market via the Food Acquisition Program (Lei 12,512, 2011) and the National School Feeding Program (Lei 11,947, 2009).

It was possible to identify 4 distinct categories among the informants through the qualitative character approach. From this finding, a typology was elaborated, characterizing the different meanings of ethnotherapy knowledge, as well as the different ways to apply this knowledge (Table 1). It should be noted that the preparation of these categories had the purpose of assisting the understanding of the sampling universe studied, with different intentions and capabilities in the social function performed in the communities in which they live (Minayo, 2004).

TABLE 1
 TYPOLOGY OF THE HOLDER OF ETHNOBOTANICAL KNOWLEDGE ASSOCIATED WITH ITS PHOTOTHERAPY
 PRACTICE AND SOCIAL FUNCTION IN THE SOUTHERN PLATEAU OF SANTA CATARINA, 2012

Type	Characteristic	Key factor
a	People whose phytotherapeutic knowledge is associated to the healing practice and religious rituals, not essentially Catholic. These healers are sought to heal both physical diseases and emotional and/or cultural diseases.	Healers
b	Individuals who have restructured their phytotherapeutic knowledge with the support of pastoral institutions, getting involved in the free public assistance, handling of phytotherapeutic items and homeopathic preparations. General activities developed voluntarily in Catholic churches, as well as in the dousing of these individuals.	Popular therapists
c	People that feel the need of rescuing phytotherapy and attend courses on cultivation, use and handling of medicinal plants. They seek information in the media and the church, among other information ways. However, they only practice what they learn from their family members.	Restructurers of knowledge
d	People having phytotherapeutic knowledge from the exchanges with neighbors and among communities. However, they do not seek improvement regarding the phytotherapeutic items, even considering their knowledge as basic or without depth/wealth.	Cultural heirs

Source: own work

The healers (a) revealed an expressiveness that goes beyond the borders of their rural community and their municipality, and may have their phytotherapeutic practices sought by people from other regions of the State of Santa Catarina. According to Lins (2014), even with the organization of health care services, starting from the 20th century, the healers retained the legitimation of their practices towards society, in social and cultural contexts that allowed the survival of these agents. In this study, the set of plants used by these benedictory was restricted to 13 plant species. Consequently, medicinal plants assume a more symbolic reference than what derives from their bioactive functions. Therapeutic techniques of healers' category involve preparations, mainly *garrafadas* (phytotherapeutic preparation involving the maceration of one or more plants in alcohol, whose application is usually for external use), in addition to fresh plants. In general, the practice of healing has a strong relationship with religion, but not only that predominates in such community (Senderski & Sochodolak, 2013). The monk João Maria is an emblematic reference to that kind of healing ritual for people living in rural areas of the Southern Plateau of Santa Catarina. João Maria was a messianic person and pilgrim, according to popular knowledge; a person that provided healing actions and baptisms, through healers, combined with rituals involving water, soil, and plants (Alves, 2010). The phytotherapeutic current practice exercised by the healers presents similarities with those practiced by the monk João Maria (Ludka, Feitosa, & Fraga 2012). Such aspect is evident in popular nomenclature

assigned to some plants cited during the interviews, such as the *São João Maria* toilet brush (*Baccharis caprariifolia*) and *São João Maria parreirinha* (*Alternanthera* sp.).

The second category aggregates popular therapists (b), which provide free public service; people whose knowledge and healing techniques are structured from formal bodies such as the health and pastoral land, and popular therapy centers. Antonio, Tesser and Moretti-Pires (2013), in the metadata analysis, proposed a similar categorization, identifying as popular therapists a series of not professionalized experts, establishing ties with individuals whose access to biomedical service is limited. In the present study, the popular therapists category plays a phytotherapeutic practice associated to a broad range of medicinal plants (27 cited plant species). A peculiarity among the popular therapists occurs in relation to the prevalence of use of exotic species. Such aspect seems to evidence the influence of knowledge formed in training courses, which, in general, focuses on exotic medicinal species, grown in backyards and gardens. It is possible to view this on the contents of booklets and handouts used by entities such as the health pastoral (Rossato, Pierini, Amaral, Santos, & Citadini-Zanette, 2012). The preparations used by popular therapists are elaborated with more defined methods than other categories, involving processed herbal medicines, such as ointments, syrups, tinctures, soaps, and homeopathic preparations.

The third category (c) is represented by individuals who seek to restructure their knowledge, from what they know, through courses offered by public extension agents, local free associations, health and agriculture departments, etc. They differ from the popular therapists category (b) because they do not devote themselves to public service. According to an analysis of the courses offered by the National Rural Learning Service (*Senar*) in the State of Minas Gerais, during a 10-year period, 6 courses were offered on the cultivation and use of medicinal plants for family farmers belonging to such organization (Oliveira, 2005). In that category (c), the restructurers of knowledge also seek to complement the knowledge that they have inherited with information from written, spoken, and televised media, herbal medicine pharmacies, basic health units, and related bibliography. Such aspect was also highlighted by Senderski and Sochodolak (2013), in their comparative study on semi-institutionalized and not institutionalized therapeutic practices in the Center-South of Paraná. This group has an experience based on the average of 17 plant species. Such category brings together people with an average age of 50 years, and represents a group that remembers how the *ancients knew the plants*, but feel that this knowledge has suffered erosion and doubt the validity of what they already know. Because of this, they dedicate themselves to rebuilding this outline, to resume it in their lives and their families, through their legitimacy with external information.

The fourth category of cultural heirs (d) is composed of the true guardians of the story that is retold, and aggregates individuals who have phytotherapeutic knowledge derived from the family and the community living together. In their study, Antonio et al. (2013) identified a similar group, defining it as familiar herbs practitioners, characterized by healing practices entered in family contexts, including recipes and homemade formulas of herbal medicinal remedies. In the present study, the cultural heirs category reported a total of 17 species of plants used in their preparations. The words of one of the informants shows the hereditary aspect of knowledge: "I learned to use the herbs with my grandmother, my father's mother. Nearby there was also a very old woman who taught me a lot of medicines, before she died." However, people in this category were described as holders of a less significant knowledge, as follows: "I don't know much, but the little I know, I can tell you."

Informants from the 4 categories illustrate the descriptive and qualitative differences in using herbal medicines. On the other hand, there were no differences in relation to the number of medicinal plants used among the 4 groups ($p = 0.06$). According to Albuquerque and Hanazaki (2006), the meaning of the choices that individuals make cannot be seized always by quantitative techniques.

Studies carried out by the World Health Organization have shown that socioeconomic inequalities among countries, coupled with the standard model of modern medicine, have promoted health care for only 1/3 of the world population (Luz, 1997). It is not a coincidence that 70% to 90% of the populations of developing countries use medicinal plants to treat diseases, especially in Asia, Africa, Latin America, and the Middle East (WHO,

2011). In Brazil, Rodrigues and Simoni (2010) report that 82% of the population makes use of medicinal plants and herbal medicines as the first cure strategy. The types of maintainers identified by the present study demonstrate that the popular use of medicinal plants has not been applied and reproduced over time, despite the pressure of the pharmaceutical industry with modern medicine. The possibility of accessing curative itineraries different from those offered in public healthcare units represents a reliable option, supported by the sociocultural aspect of trust in these alternative healing systems. For non-privileged social classes, unable to access the private health care system, the use of medicinal plants in curing diseases represents the only possible therapeutic resource (Marques, 2009).

Usage categories and therapeutic indications

The categories of higher frequency in the use of medicinal plants, expressed by the value of diversity use index (VDU), were for digestive disturbances (n = 175; VDU = 0.177) and the respiratory system (n = 117; VDU = 0.118) (Figure 1). According to Monteiro et al. (2006), VDU measures the importance of categories in a studied social group. There are elements in the statement of one of the informants that illustrate this possibility.

People who grew up here were cured by these plants with what they had here. [A] doctor was only found in Lages, there was no good road to get there. The solution was to heal with what we had. Flu was cured with tea and eggnog, and bed.

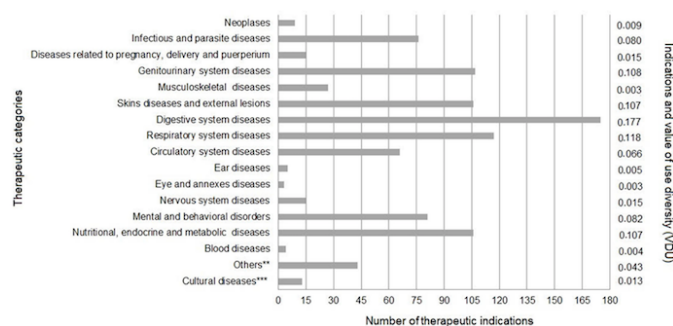


FIGURE 1

THERAPEUTIC CATEGORIES BASED ON THE INTERNATIONAL STATISTICAL CLASSIFICATION OF DISEASES AND RELATED HEALTH PROBLEMS (WHO, 2007), THE NUMBER OF THERAPEUTICAL INDICATIONS AND THE VALUE OF USE DIVERSITY

* VDU.

** Information does not fit in the categories.

*** Diseases related to emotions, beliefs and not exactly to physical infirmities.

SOURCE: OWN WORK

According to Gielda (2008), the regional food is characterized by the consumption of beans, corn flour, cassava flour, grits, boiled cassava, pork, and fried and roasted cattle meat. Therefore, it is possible that digestive diseases can be associated with eating habits prevalent in rural communities of the region, with a predominance of fats and carbs. Breakfast, in general, is composed by beans, considered a substantive food. The statement of one of the informants illustrates such aspect: “now and then we eat and feel heavy.” So, generally these ailments are mitigated by medicinal plants. Expressions reported by informants as “thin the blood” or “purifying the blood” evidence the therapeutic knowledge to reduce the fat present in the blood. Therefore, the cuisine of the farmers also reveals their relationship with local ancient healing practices herbal medicine for endocrine, nutritional, and metabolic diseases (VDU = 0.107). The prevalence of indications for the respiratory, digestive, and endocrine category was reported also by Pinto, Amorozo and Furlan (2006) in rural communities in the State of Bahia, and by Giraldi and Hanazaki (2010) in the locality of Azorean origin on the coast of Santa Catarina.

The category of genitourinary diseases was also evidenced by the informants (VDU = 0.108) and comprises mainly urinary and kidney infections (kidney stone). Among women, there are menstrual cramps and infections of the female reproductive system. Franco and Barros (2006) observed similar aspects in a Quilombola community in the State of Piauí, Brasil, where 10.4% of therapeutic recommendations corresponded to the genitourinary category,

with emphasis on female infections. Illnesses linked to skin also stood out (VDU = 0.107), including external injuries, allergies, insect and snake bites, and injuries in general.

The cultural diseases category was drawn up on the basis of recommendations and illnesses that do not fall under the classification of institutionally recognized diseases. Standing out in this category of diseases are those that are included only in the social context, where they were reported as “air in the eye, fallen ark, *rendidura*, stoned milk, relapse, distorted mouth, *quebrante*, evil eye, weakness, *encosto*.” The category of *cultural diseases* was also reported by Albuquerque (2010) in the Brazilian Northeast region. According to Ferreira-Júnior, Ladio and Albuquerque (2011), each culture has its own system for the identification and classification of diseases, as well as its own healing system.

In addition to the use of phytotherapy, there are other healing practices, which combine home remedies, synthetic medicine, and healers, without following pre-established criteria. It can be cited as an example the relief of backache, combining synthetic anti-inflammatory drugs with *quebra pedra* (*Phyllanthus tenellus* Roxb.), *chapéu-de-couro* (*Echinodorus grandiflorus* [Cham. & Schlecht.] Mill.) or *pata-de-vaca* (*Bauhinia forficata* Link); also hookworm prayer treatment in children, which combines healing, anti-thermal, synthetic, and extensive use of children and mint tea (*Mentha* sp.). A similar aspect was recorded by Amorozo (1996) among the Northern Brazilian region caboclos who, to cure headaches, make use of baths with several plants, dissolving allopathic tablets in the water of these baths. In the region of Cordoba, Argentina, Trillo, Toledo and Galetto (2010) also observed complementarity between the adoption of medicinal plants and the consultation of the official health system by inhabitants of the rural communities.

It was observed that many plants are repeated in more than one category of use. For instance, the *Acheillea millefolium* L. is known as a ready relief, because it is recommended for pain, flu, stomachache, headache, cramps, and evil eye. Therefore, it justifies its popular name —*pronto alívio* in Portuguese, which can be translated as *ready relief*—. However, the VCUM allows observing that medicinal plants often cited and recommended for different categories converge for a specific category, illustrating concordance among informants. Such aspect is evident for *Acca sellowiana* (digestive use), *Malva parviflora* L. (infectious diseases), *Phyllanthus tenellus* Roxb. (genitourinary issues) (Table 2).

TABLE 2
 MEDICINAL PLANTS OF GREATEST VALUE OF CONSENSUS ON USAGE MODE (VCUM) IN THE RESPECTIVE
 CATEGORIES OF USE, ON AN ETHNOBOTANICAL SURVEY ON THE SOUTHERN PLATEAU OF SANTA CATARINA, 2012

Species and/or gender	Category of diseases	VCUM*
<i>Acca sellowiana</i> <i>Acca sellowiana</i> (O. Berg) Burret	Digestive system	0.90
<i>Acheillea millefolium</i> L.	Circulatory system	0.27
<i>Aloe vera</i> (L.) Burm.f.	Skin	0.50
<i>Aristolochia triangularis</i> Cham.	Digestive system	0.35
<i>Artemisia absinthium</i> L.	Digestive system	0.53
<i>Baccharis articulata</i> Lam. Pers.	Digestive system	0.35
<i>Baccharis trimera</i> (Less.) DC.	Digestive system	0.46
<i>Bauhinia forficata</i> Link	Genitourinary system	0.60
<i>Chenopodium ambrosioides</i> L.	Infectious and parasite	0.45
<i>Cynara scolymus</i> L.	Digestive system	0.60
<i>Equisetum giganteum</i> L.	Genitourinary system	0.44
<i>Gochnatia polymorpha</i> (Less.) Cabr.	Respiratory system	0.60
<i>Hypochaeris</i> sp.	Circulatory system	0.28
<i>Lippia alba</i> (Mill.) N. E. Br	Mental and behavioral disorders	0.63
<i>Malva parviflora</i> L.	Infectious	0.80
<i>Maytenus</i> sp.	Endocrine	0.40
<i>Mentha</i> sp.	Mental and behavioral disorders	0.25
<i>Ocimum selloi</i> Benth.	Mental and behavioral disorders	0.36
<i>Petiveria alliacea</i> L.	Cultural	0.33
<i>Phyllanthus tenellus</i> Roxb.	Genitourinary system	0.84
<i>Piper</i> sp.	Respiratory system	0.35
<i>Plantago major</i> L.	Infectious and parasite	0.37
<i>Rosmarinus officinalis</i> L.	Circulatory system	0.33
<i>Rubus</i> sp.	Endocrine, nutritional	0.63
<i>Ruta graveolens</i> L.	Pregnancy, delivery and puerperium	0.28
<i>Salvia officinalis</i> L.	Digestive system	0.29
<i>Urera bacifera</i> (L.) Gaudich	Skin	0.33
<i>Zingiber</i> sp.	Respiratory system	0.62

Source: own work

* Value of consensus on the use mode.

According to Silva, Nascimento, Soldati, Medeiros and Albuquerque (2010), the consensus of the informants implies a possible efficacy of the plant for a given recommendation or suggests validation of knowledge within that sociocultural context. However, the *Origanum vulgare* L. species, indicated for infectious diseases and mental disorders, may not have its primary use for these disorders. In fact, the species is also used as a condiment and can be grown just for this purpose in several families out of those that were visited.

The study showed the presence of popular knowledge of potential medicinal plants that also had a role on the forest formation of the analyzed territory; species that can be included as potential allies for rural development.

Almeida, Meira, Nobre and Tupiná (2012) emphasize the need for installing medicinal herbs in gardens to supply the health units, as well as schools, neighborhood associations, or farmers, providing the participation of local civil society, as well as the help with raw material for care health. However, Marques (2009) points out that the immediate association between medicinal plants and health does not allow them to be seen as sources of an agricultural potential development. Therefore, medicinal plants, as alternatives of income generation, must be contextualized with the health system and agronomic potentialities of cultivation.

Under the guidelines of the National Policy of Medicinal Plants and Phytotherapeutics, family agriculture is a priority option for the cultivation of medicinal plants and supply of raw material for the manipulation of herbal medicines (Silva & Moraes, 2009). However, Souza, Pereira and Fonseca (2012) observed in Belo Horizonte, a major city located in Minas Gerais, that the supply of medicinal plants, both for commercialization in pharmacies and for distribution in the public health system, is done predominantly by big companies recognized in the country, due to the difficulty of their identification and access to local farmers who are potential suppliers of medicinal plants. The situation is different, as reported by Marques (2009), in the states of Santa Catarina and Rio Grande do Sul, as in those places there are groups of family farmers who, through the cultivation of medicinal plants, found mechanisms for valorizing agrobiodiversity and innovation that could contribute to their family incomes. For this reason, they use short marketing channels. However, they face difficulties due to supervisory bodies and restrictions of technical assistance. Therefore, the case raised by our study illustrates possibilities of joining popular knowledge about medicinal plants with production and income improving.

Conclusion

Rural families show phytotherapeutic knowledge related to the environment in which they are inserted. In the Southern Plateau of Santa Catarina, Brazil, it is possible to identify distinct groups, which differ by their access and uses of herbal medicine information, and ways of reproducing it, as well as in accordance to the medical indications they follow. The diversity of knowledge extends to different groups of diseases, as revealed by farmers. Phytotherapeutic knowledge shared by farmers of the studied region is one of the elements present on the identity of the *caboclo*, and assumes a symbolic value that can be interpreted as cultural heritage.

The systematization of knowledge shared by family farmers in the studied territory is extremely relevant when one can envisage the rural development with a focus on the production of medicinal plants. The insertion of family agriculture into the phytotherapeutic production chain still demands adjustments through legal regulations. However, taking into account that possibility, the studies implemented to identify the medicinal plants that are known, and their indications of use, are the most important factors. The adequacy of legal provisions that regulate the production of medicinal plants and the distribution of herbal medicines also presents a challenge for farmers and stakeholders; an issue related to public health service. The organization of information on popular uses of medicinal plants may encourage future public policies at regional and municipal levels with actions to promote rural development based on the insertion of family agriculture in the phytotherapeutic productive chain.

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Notes

- * Artículo de investigación.

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